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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/666,855

09/19/2003

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EXAMINER

MOON, SEOKYUN

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

04/30/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/666,855	Applicant(s) WADA ET AL.	
	Examiner SEOKYUN MOON	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

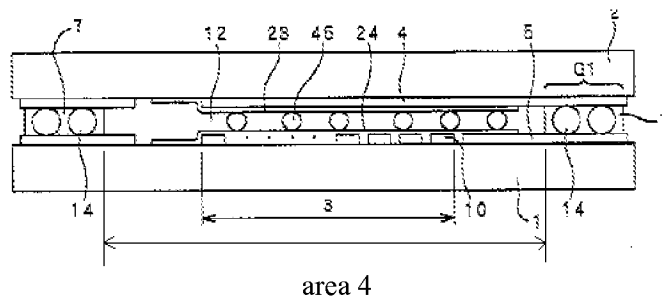
- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The Applicant's arguments filed on 01/04/2008 have been fully considered.

The Applicant [Applicant's Remark: page 8 3rd paragraph] pointed out that the prior art of record (US 6,806,938, herein after "*Asakura*") does not teach "*the display area including intersecting sections*" (which is disclosed in 2nd paragraph last line of claim 1, as "*intersecting sections in the display area*"). Specifically, the Applicant argued that it is not proper to refer area 4 [drawing 1 provided below, which is equivalent to fig. 2 of *Asakura*] as a display area since *Asakura* defines area 3 as a display area and the area located between area 3 and the sealing material 7 is considered as a dummy area.



Drawing 1

Examiner respectfully disagrees.

Examiner might agree with the Applicant that it is common and well known in the art to refer an area dedicated to display images, as a display area [Applicant's Remark: page 8 4th paragraph]. However, the Examiner respectfully submits that the Examiner's interpretation, i.e. referring area 4 as a display area instead of referring area 3 as a display area, is consistent with the Applicant's view or interpretation regarding the claimed display area. As well known in the art and acknowledged by the Applicant, pixels used to display images are located at intersections of a plurality of first electrodes and a plurality of second electrodes [Applicant's specification: par. (0009) lines 3-6]. In other words, an image cannot be

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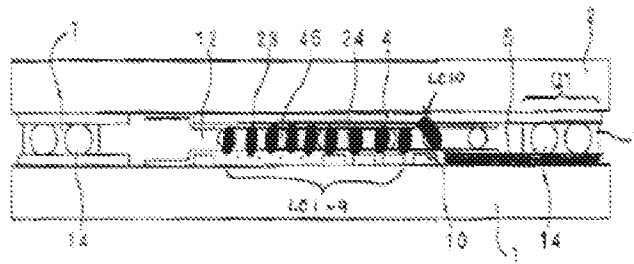
formed or displayed on an area where there is no first electrode and second electrode. Therefore, if the Applicant's assertion, i.e. referring only the area that contributes to image display and is exposed to users, as a display area, is applied to the instant invention, it would not be reasonable to indicate the intersecting section to be included in the display area since the intersecting area does not include any second electrode, and thus an image cannot be formed or displayed on that area. Furthermore, paragraph [0015] of the instant invention discloses introducing a light-block layer to prevent lighting-up at the intersecting area or the cross sections (which indicates that the intersecting area is not used as a part of a display area).

Accordingly, the Examiner respectfully submits that the Examiner's interpretation regarding the term, "*display area*" might not be obvious to one of ordinary skill in the art, but it is consistent with the Applicant's view or interpretation regarding the claim language, and thus it is reasonable for the Examiner to make such an interpretation.

The Applicant further argued the Examiner's inherency statement made in the previous Office action. Specifically, the Applicant [Applicant's Remark: page 10 3rd paragraph] pointed out, "*Without using the intersecting sections to display an image, Asakura does not even recognize the problem that is caused by using the intersecting sections to display image, let alone the voltage of these intersecting sections*".

Examiner respectfully disagrees.

Examiner respectfully submits that regardless of whether the intersecting section is contributed to a part of the display area or not, if the claimed first effective value of a voltage is greater than the claimed second effective value of a voltage, the display of Asakura would not work properly. Please refer to drawing 2 provided below for further explanation.



Drawing 2

As shown above, liquid crystal particles 1-9 might not be directly effected by the voltage difference between the wiring 5 and the common electrode 4 (equivalent to the claimed "*first effective value of a voltage*") and might be effected only by the voltage difference between the segment electrode 10 and the common electrode 4 (equivalent to the claimed "*second effective value of a voltage*"), but the liquid crystal particles located at the boundary of the area 3 are directly effected by the voltage difference between the wiring 5 and the common electrode 4 as well as the voltage difference between the segment electrode 10 and the common electrode 4. Thus, it is inherent for the display of Asakura to specify the first effective value to be smaller than the second effective value in order to make the liquid crystal particles located at the boundary of the area 3 to be controlled by the voltage difference between the common electrode and the segment/signal electrode (note that voltages corresponding to image data to be displayed are transmitted to the pixels through the segment/signal electrodes).

Accordingly, the Examiner respectfully submits that the Applicant's arguments regarding the Examiner's inherency statement made in the previous Office action are not persuasive.

Regarding the rejections of claims 2, 5, 8, and 12, the Applicant pointed out that neither Nomura (US 6,236,385) nor Morimoto (US 6,181,406) can make the claims obvious because neither Nomura nor Morimoto teaches any intersecting sections in a display area.

Examiner respectfully disagrees. In response to the Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981);

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In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Examiner respectfully submits that ,for the combination of Asakura and Nomura and of Asakura and Morimoto, the Examiner merely applies the concepts of Nomura and Morimoto, i.e. a concept of determining / changing the voltages applied to liquid crystals by adjusting the duty ratio of a driving signal, in a liquid crystal display and a concept of introducing a light-shielding layer on one of a first substrate and a second substrate so as to overlay the cross sections between one of wiring lines and first electrodes other than the first electrode connected to the corresponding wiring line, to the liquid crystal device of Asakura, respectively since Asakura already teaches intersecting sections included in a display area.

Accordingly, the Examiner respectfully submits that the Applicant's arguments regarding the rejections of claims 2, 5, 8, and 12 are not persuasive.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1, 3, 4, 6, 7, 9, 10, and 11** are rejected under 35 U.S.C. 102(e) as being anticipated by Asakura (US 6,806,938).

As to **claims 1 and 3**, Asakura teaches a liquid crystal device [col. 1 lines 15-17] having liquid crystals between a first substrate ("*glass substrate 2*") [fig. 2] and a second substrate ("*glass substrate 1*") that faces the first substrate through a sealing material ("*sealing resin 7*") [col. 7 lines 58-62], in which pixels corresponding to intersections of a plurality of first electrodes ("*transparent electrodes 4*") [fig. 2]

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on the first substrate and a plurality of second electrodes ("*segment electrodes 10*") on the second substrate are turned on or off in accordance with voltages applied to the first electrodes and the second electrodes [col. 7 lines 38-55, emphasis on lines 53-55], the liquid crystal device comprising:

wiring lines ("*wiring pattern 5*") [fig. 2], provided on the second substrate ("*glass substrate 1*"), each wiring line corresponding to one of the first electrodes ("*transparent. electrode 4*") on the first substrate [fig. 5A], the wiring lines being connected to the corresponding first electrodes and each having a part extending in a display area ("*area 4*") [drawing 1 provided on page 2 of this Office action] surrounded by a frame area (the area outside of the "*area 4*" and outside of the "*sealing resin 7*") [drawing 1] which does not contribute to display, the frame area being arranged outside the sealing material ("*sealing resin 7*") [fig. 5A], each wiring line intersecting at least one first electrode other than the corresponding first electrode at intersecting sections, in the display area [drawing 1 on page 2 of this Office Action, which is equivalent to Asakura's fig. 1A]; and a drive circuit ("*driver IC*") applying a voltage to the first electrodes ("*transparent electrode 4*") through the wiring lines ("*wiring pattern 5*").

Asakura inherently teaches each of the first electrodes being supplied with a first voltage when selected and being supplied with a second voltage when not selected since it is required for Asakura's liquid crystal display to drive each of the first electrodes selectively depending on the content of the image to be displayed and thus it is required for the driver to supply different voltages alternately to the first electrodes in order to turn on/off the pixels including the first electrodes to display, the desired image.

Furthermore, Asakura inherently teaches a first effective value of a voltage applied to the liquid crystals at the intersecting sections being smaller than a second / third effective value of a voltage applied to a pixel for turning on / off the pixel, wherein the first effect value is based on a difference between the first voltage and the second voltage and the second / third effect value is based on a difference between the first voltage and a voltage supplied to one of the second electrodes for turning on / off a pixel since

the effective value of a voltage applied to the Pixel for turning on / off the pixel is the voltage controlling the alignment of the liquid crystals constituting the display operation of the liquid crystal display and the alignment state/mode of liquid crystals is determined depending on whether the effective value of the voltage applied to the pixel is greater or less than a certain threshold voltage. When the effective value of the voltage applied to the liquid crystals at cross sections is greater than the effective value of the voltage applied to the pixel for turning on / off the pixel, the actual effective value of the voltage applied to the pixel is effected and compensated by the effective value of the voltage applied to the liquid crystals at cross sections and thus overall effective value of the voltage applied to pixel is changed, which causes an unexpected display operation in terms of gradation control for the display device.

Therefore, it is required for Asakura's display to specify the first effective value of a voltage applied to the liquid crystals at the cross sections being smaller than a second / third effective value of a voltage applied to a pixel for turning on / off the pixel in order to display images properly.

As to **claim 4**, all of the claim limitations have already been discussed with respect to the rejection of claims 1 and 3 since if the first effective value of the voltage is smaller than both of second and third effect values of the voltage, then the first effective value of the voltage is also smaller than the intermediate value of the voltage between the second effective value of the voltage and the third effective value of the voltage.

As to **claim 6**, Asakura teaches an electronic equipment ("*liquid crystal display device*") provided with the liquid crystal device, according to claim 1 [col. 1 lines 15-17].

As to **claim 7**, all of the claim limitations have already been discussed with respect to the rejection of claim 1.

As to **claim 9**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.

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As to **claim 10**, all of the claim limitations have already been discussed with respect to the rejection of claim 4.

As to **claim 11**, all of the claim limitations have already been discussed with respect to the rejection of claim 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 2, 8, and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura in view of Nomura (US 6,236,385).

As to **claim 2**, all of the claim limitations have already been discussed with respect to the rejection of claim 1 (determining that the first effective value of the voltage applied to the liquid crystals at the cross sections becomes smaller than the second effective value of the voltage applied to the corresponding pixel for turning on the pixel) except for determining at least one of a duty ratio and a bias ratio to set the first effect value of the voltage applied to the liquid crystals at the cross sections.

Asakura does not teach determining at least one of a duty ratio and a bias ratio to set the effective values of the voltages applied to the liquid crystals.

However, Nomura [col. 4 lines 38-44] teaches a method of determining / changing the voltages applied to liquid crystals by adjusting the duty ratio of a driving signal, in a liquid crystal display.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use duty ratio of Asakura's driving signal in order to set Asakura's first effective value of the voltage to be smaller than the second effective value of a voltage, as taught by Nomura, since it is well known in the art

to use the duty ratio of a driving signal instead of using the amplitude of the driving signal in order to change the voltages applied to liquid crystals.

As to **claim 8**, all of the claim limitations have already been discussed with respect to the rejection of claim 3 (determining that the first effective value of the voltage applied to the liquid crystals at the cross sections becomes smaller than the third effective value of the voltage applied to the corresponding pixel for turning off the pixel) except for determining at least one of a duty ratio and a bias ratio to set the first effect value of the voltage applied to the liquid crystals at the cross sections.

Asakura does not teach determining at least one of a duty ratio and a bias ratio to set the effective values of the voltages applied to the liquid crystals.

However, Nomura [col. 4 lines 38-44] teaches a method of determining / changing the voltages applied to liquid crystals by adjusting the duty ratio of a driving signal, in a liquid crystal display.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use duty ratio of Asakura's driving signal in order to set Asakura's first effective value of the voltage to be smaller than the third effective value of a voltage, as taught by Nomura, since it is well known in the art to use the duty ratio of a driving signal instead of using the amplitude of the driving signal in order to change the voltages applied to liquid crystals.

As to **claim 12**, all of the claim limitations have already been discussed with respect to the rejection of claim 3 (determining that the first effective value of the voltage applied to the liquid crystals at the intersecting sections becomes smaller than the third effective value of the voltage applied to the corresponding pixel for turning off the pixel) except for determining at least one of a duty ratio and a bias ratio to set the first effect value of the voltage applied to the liquid crystals at the intersecting sections.

Asakura does not teach determining at least one of a duty ratio and a bias ratio to set the effective values of the voltages applied to the liquid crystals.

However, Nomura [col. 4 lines 38-44] teaches an idea of determining / changing the voltages applied to liquid crystals by adjusting the duty ratio of a driving signal, in a liquid crystal display.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use duty ratio of the driving signal of Asakura in order to set the first effective value of the voltage of Asakura to be smaller than the third effective value of a voltage, as taught by Nomura, since it is well known in the art to use the duty ratio of a driving signal instead of using the amplitude of the driving signal in order to change the voltages applied to liquid crystals.

6. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura in view of Morimoto (US 6,181,406).

Asakura teaches a liquid crystal device.

Asakura does not teach the liquid crystal device including a light-shielding layer provided on one of the first substrate and the second substrate so as to overlay the cross sections.

However, Morimoto [fig. 4] teaches a light-shielding layer ("*light-shielding layer 63 and 64*") provided on one of the first substrate ("*opposite substrate 22*") and the second substrate ("*array substrate 20*") so as to overlay the cross sections between one of the wiring lines and first electrodes other than the first electrode connected to the corresponding wiring line among the plurality of first electrodes [col. 8 lines 43-49].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a light-shielding layer in the liquid crystal display device of Asakura, as taught by Morimoto, in order to block / shield any interfering lights and thus to optimize the display output contrast of the display device.

Conclusion

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7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

April 25, 2008

/S. M./

Examiner, Art Unit 2629

/Sumati Lefkowitz/

Supervisory Patent Examiner, Art Unit 2629